



COURSE..... Participatory Analytics: Combining Participatory and Data-intensive Methods into Impactful Research Designs
SEMESTER/YEAR.... 1º/2026
PROGRAM..... School of Methods
CLASS-HOURS..... 30 hours or 15 hours (select)
PROFESSOR..... João Porto de Albuquerque
LANGUAGE.....ENGLISH (unless there are only Portuguese-speaking participants)

COURSE OBJECTIVES

Participatory Analytics addresses the skilful use of participatory and data-intensive methodologies to engage citizens, communities and other stakeholders in generating, circulating and utilising digital data. The course's main objective is to provide participants with a grounded knowledge of how participatory methods (citizen science, open mapping, participatory action research, and participatory artificial intelligence) can be combined into mixed-methods research designs aimed at achieving impact and social change. As a cross-cutting lens, the course draws on critical data studies and socially engaged pedagogy and research (e.g., Paulo Freire, Orlando Fals-Borda) to interrogate how social inequalities are associated with data gaps to bias current data systems and artificial intelligence technologies, as well as how they can be reshaped in ways that engage oppressed and disadvantaged people to challenge unjust power structures and promote transformations towards more just, resilient and sustainable futures.

This course will provide students with:

- Knowledge and skills on participatory analytics methods, including citizen science, open mapping, participatory action research and participatory software design.
- Methodological skills for conceiving and implementing mixed-methods research designs that combine participatory and quantitative, data-intensive methods. Case studies of real-world projects will be used to enable learning from their experiences, challenges and outcomes.
- Substantive theoretical and conceptual knowledge needed to make sense of the impact of participatory analytics designs for public policy and practice, with a focus on addressing social and environmental injustices and promoting just transformations.
- Fundamental knowledge of using tools to support participatory data-intensive methods, including KOBOToolBox, OpenStreetMap Editors, SketchMapTool and an introduction to data visualisation/QGIS.
- Problem-based learning based on student-led projects and scientific writing carried out in the form of a research protocol/article on addressing societal challenges with mixed-methods participatory analytics designs.

The course is especially suited for PhD students and early or mid-career researchers from a range of backgrounds interested in developing conceptual and methodological knowledge on mixed-methods research designs that combine participatory and data-intensive methods for impactful, action-oriented research.

LEARNING GOALS

The course learning goals are presented in the table below, showing how they contribute to the learning goals related to methods, for the stricto sensu graduate programs at FGV-EAESP.

Program learning goals	Course learning goals	Level of contribution
Scientific method	Students will be able to critically assess and create mixed-methods research designs combining participatory and data-intensive methods with a consideration of impacts in public policy and practice.	• • •



Research project / procedures	Students will learn skills for undertaking research through a problem-based learning case studies of projects using mixed-methods designs.	● ● ○
Qualitative research methods	Students will gain knowledge on concepts, methods and tools for undertaking participatory methods with data: citizen science, open participatory mapping, participatory action research, and participatory software design.	● ● ●
Quantitative research methods	Students will learn how to enrich quantitative methods by combining them with and participatory research methods.	● ○ ○
Development of academic papers	Students will gain knowledge and skills in creating a conceptual and methodological framework applied to a topic of their interest, developed in a research protocol or article for the final assignment of the course.	● ● ●
Other course learning goals: In order to assess impacts, students will develop new conceptual and theoretical knowledge to discuss various issues associated with power (who owns and has control), regulations, and practices of participatory analytics, as well as how they may reinforce or challenge inequalities and exclusions in society. They will also learn how to consider various approaches and opportunities to the use these methods that may promote innovation and justice, improve society and well-being, and/or empower citizens and community actions in new ways.		

The full description of the learning goals of FGV-EAESP stricto sensu graduate programs can be found at <https://rebrand.ly/cursos-pos-eaesp>.

PREVIOUS KNOWLEDGE REQUIRED

No in-depth previous knowledge of specific methods or tools is required, but the course assumes a basic generalist knowledge of quantitative (e.g. basic statistical data analysis, e.g. understanding correlations and linear regressions) and qualitative social research methods (e.g. interview techniques, case studies). It will be relevant for researchers with basic training in either quantitative or qualitative methods who want to expand their methodological repertoire. Participants could come from a background either in the social sciences (e.g. sociology, business administration, public administration, geography) or technical disciplines (e.g. computer science, engineering).

CONTENT/METHODOLOGY

This course consists of two streams that are described as follows.

- **Stream I – Re-thinking data, maps, and algorithms:** The conceptual stream of the course covers the theoretical underpinnings and consists of lectures with class discussions and seminars. They will include both dialogic lectures delivered by the teacher, as well as student-led presentations and group discussions. A set of key readings will be introduced in the first class and assigned to students. Each student is expected to deliver one presentation in class.
- **Stream II – Re-mixing methods in participatory analytics:** The second stream of the course is based on a series of case studies, workshops and problem-based project exercises, which are aimed at developing competence in the use of mixed methods and tools (e.g., OpenDataKit/KOBO ToolBox, OpenStreetMap, SketchMapTool and QGIS) with a focus on citizen data generation, open community mapping and data visualisation.

ASSESSMENT

The assessment for this course consists of three components:

- 1) Active participation in class discussions (30%).
- 2) A student-led ignite presentation (5-10 minutes) on a topic distributed in the first class that covers one of the key readings of the course (see Bibliography below) (30%).



3) Final written assignment of an individual paper (40%).

The final paper will consist of a research protocol/article with around 5,000 words. You can choose one of the following options for this assignment:

- **Research protocol:** The research protocol should discuss a concrete challenge and research question and propose a justified mixed-methods research design to address it. You should format it as a mini research proposal, including an introduction, a well-founded description of methods, and a detailed account of the procedures to be used, alongside expected outputs and outcomes.
- **Research article:** The article will be a short piece of research structured as a standard scientific article (e.g., introduction, literature, methods, results and discussion), which can include an analysis of a concrete case with conceptual and theoretical exploration of the issues involved (in dialogue with the literature in the key readings and further readings of the course, and beyond). Examples of specific data, methods and challenges in the context can be used to support your analysis (e.g. maps, charts, data visualisations can be used for illustration).

All course participants should prepare a mandatory presentation with a pitch of their idea for the final paper, which will be presented in the last class and receive formative feedback. The final paper's deadline will be two weeks after the last class.

COURSE SCHEDULE

Detailed Schedule - Overview

<i>Encounter</i>	<i>Date</i>	<i>Stream I: Rethinking data, maps and algorithms</i>	<i>Stream II: Re-mixing urban analytics</i>
1	12/06/2026 09:00-13:40 (online)	Cities out of data - conceptualising data and inequalities.	Workshop 1: Introductions and assignment of key readings for presentations.
2	22/06/2026 14:00-18:40 (in person)	Citizen science - reclaiming citizen data for transformations. <i>Case Study: Waterproofing Data</i>	Workshop 2: Introduction to citizen data tools: OpenDataKit/KOBO ToolBox.
3	24/06/2026 14:00-18:40 (in person)	Open mapping - reimagining maps for making spaces visible. <i>Case Study: Openstreetmap and Slum Mapping</i>	Workshop 3: OpenStreetMap and the mapping with OpenStreetMap (ID Editor).
4	25/06/2026 14:00-18:40 (in person)	Participatory action research - reconfiguring data and maps with communities for resilience. <i>Case Study: URBE Latam</i>	Workshop 4: From paper to geographic data with the SketchMapTool.
5	26/06/2025 9:00-13:40 (in person)	Participatory Intelligence: Artificial remaking algorithmic models for justice. <i>Case Study: IDEAMAPS Data Ecosystem</i>	Workshop 5: Introduction to data visualisation.
6	30/06/2026 14:00-18:40 (in person or online)	Redesigning data analytics for impact: transformations to sustainability and justice	Workshop 5: Presentation of project ideas and feedback.



BIBLIOGRAPHY

1. First Encounter: Cities out of data - conceptualising data, inequalities and justice.

We will explore how the concept of digital data has changed over time, the main sources of spatial data and how they have been influencing policy and society. Exploring the main challenges with data in relation to urban and social inequalities, and how they are associated with inequalities, we will discuss the concept of data justice.

Key readings:

Cinnamon, J. (2020). Data inequalities and why they matter for development. *Information Technology for Development*, 26(2), 214–233. <https://doi.org/10.1080/02681102.2019.1650244>

Kitchin, R. (2014). Conceptualising data. In *The data revolution: Big data, open data, data infrastructures & their consequences* (pp. 1-26). SAGE Publications Ltd, <https://www-doi-org.ezproxy.lib.gla.ac.uk/10.4135/9781473909472>

Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. *Big Data and Society*, 4(2), 1–14. <https://doi.org/10.1177/2053951717736335>

Case studies: revealing data inequalities

Porto de Albuquerque, J., Anderson, L., Calvillo, N., Coaffee, J., Cunha, M. A., Degrossi, L. C., Dolif, G., Horita, F., Klonner, C., Lima-Silva, F., Marchezini, V., Martins, M. H. da M., Pajarito-Grajales, D., Pitidis, V., Rudorff, C., Tkacz, N., Traijber, R., & Zipf, A. (2021). The role of data in transformations to sustainability: a critical research agenda. *Current Opinion in Environmental Sustainability*, 49, 153–163. <https://doi.org/10.1016/j.cosust.2021.06.009>

Herfort, B., Lautenbach, S., Porto de Albuquerque, J., Anderson, J., & Zipf, A. (2023). A spatio-temporal analysis investigating completeness and inequalities of global urban building data in OpenStreetMap. *Nature Communications*, 14(1), 3985–3985. <https://doi.org/10.1038/s41467-023-39698-6>

WATCH: [Big Data: why should you care?](#) The Guardian 5 Minute Masterminds with Timandra Harkness.

WATCH: [Introducing Data Justice](#), the Alan Turing Institute.

2. Second Encounter: Citizen Science - reclaiming citizen data for transformation.

We will review discourses on smart cities, urban resilience and urban transformations, including international frameworks (New Urban Agenda, Sendai Framework for Disaster Risk Reduction, United Nations Sustainable Development Goals) and critical perspectives. This will be the basis for revisiting the methods of **citizen digital participation and citizen science**. Case study: data for urban transformations to disaster resilience (Waterproofing Data project).

Key readings:

Arnstein, S. R. (1969). A Ladder Of Citizen Participation. *Journal of the American Planning Association*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>

Henrique, K. P., & Tschakert, P. (2021). Pathways to urban transformation: From dispossession to climate justice. *Progress in Human Geography*, 45(5), 1169–1191. <https://doi.org/10.1177/0309132520962856>

Freire, P. (2005). *Pedagogia do Oprimido [Pedagogy of the oppressed]* (9th ed.). Paz e Terra. Read Chapter 3.

Cardullo, P., & Kitchin, R. (2019). Being a ‘citizen’ in the smart city: Up and down the scaffold of smart citizen participation in Dublin, Ireland. *GeoJournal*, 84(1), 1–13. <https://doi.org/10.1007/s10708-018-9845-8>

Chambers, J. M., Wyborn, C., Klenk, N. L., Ryan, M., Serban, A., Bennett, N. J., Brennan, R., Charli-Joseph, L., Fernández-Giménez, M. E., Galvin, K. A., Goldstein, B. E., Haller, T., Hill, R., Munera, C., Nel, J. L., Österblom, H., Reid, R. S., Riechers, M., Spierenburg, M., ... Rondeau, R. (2022). Co-productive agility and four collaborative pathways to sustainability transformations. *Global Environmental Change*, 72, 102422. <https://doi.org/10.1016/j.gloenvcha.2021.102422>

Case study: Waterproofing Data



- Porto de Albuquerque, J., & Albino de Almeida, A. (2020). Modes of engagement: Reframing “sensing” and data generation in citizen science for empowering relationships. In T. Davies & A. Mah (Eds.), *Toxic truths* (pp. 267–281). Manchester University Press. <https://doi.org/10.7765/9781526137005.00028>
- Porto de Albuquerque, J., Anderson, L., Calvillo, N., Cattino, M., Clarke, A., Cunha, M. A., Degrossi, L. C., Garder-Hansen, J., Klonner, C., Lima-Silva, F., Marchezini, V., Martins, M. H. da M., Pajarito Grajales, D., Pitidis, V., Rizwan, M., Tkacz, N., & Trajber, R. (2023). Dialogic data innovations for sustainability transformations and flood resilience: The case for waterproofing data. *Global Environmental Change*, 82(October 2022), 102730–102730. <https://doi.org/10.1016/j.gloenvcha.2023.102730>

WATCH: [How Smart are Smart Cities?](#) DW Shift.

3. Third Encounter: Open Mapping - reimagining maps for making spaces visible.

We will discuss the implications of recent technological developments (e.g. social web, big data analytics, internet of things) to the conceptualisation of space and territories, focusing on **participatory mapping methods** (and participatory Geographic Information Systems) in urban planning and management. Case study: Humanitarian mapping, invisible areas and slums (slum mapping project).

Key readings:

- Halvorsen, S. (2019). Decolonising territory: Dialogues with Latin American knowledges and grassroots strategies. *Progress in Human Geography*, 43(5), 790–814. <https://doi.org/10.1177/0309132518777623>
- Kitchin, R., & Dodge, M. (2014). The Transduction of Space. In *Code/space: software and everyday life* (Issue 2014, pp. 65–80). The MIT Press.
- Santos, M. (2005). O retorno do território. In: *Territorio y movimientos sociales. OSAL: Observatorio Social de América Latina*, 16(6), 1–13.
- Schröder-Bergen, S., Glasze, G., Michel, B., & Dammann, F. (2021). De/colonizing OpenStreetMap? Local mappers, humanitarian and commercial actors and the changing modes of collaborative mapping. *GeoJournal*, 7. <https://doi.org/10.1007/s10708-021-10547-7>

Case study: Mapping slums

- Yeboah, G., Porto de Albuquerque, J., Troilo, R., Tregonning, G., Perera, S., Ahmed, S. A. K. S., Ajisola, M., Alam, O., Aujla, N., Azam, S. I., Azeem, K., Bakibinga, P., Chen, Y.-F., Choudhury, N. N., Diggie, P. J., Fayehun, O., Gill, P., Griffiths, F., Harris, B., ... Yusuf, R. (2021). Analysis of OpenStreetMap Data Quality at Different Stages of a Participatory Mapping Process: Evidence from Slums in Africa and Asia. *ISPRS International Journal of Geo-Information*, 10(4), 265. <https://doi.org/10.3390/ijgi10040265>

WATCH: [Geospatial Revolution / Episode Four, Chapter Four: Mapping Power to the People](#), Penn State University.

WATCH: [The Gall-Peters projection - "The West Wing" Season 2 Episode 16](#) (and reflect about assumptions encoded in data) and then watch the next one for more background.

WATCH: [Why all world maps are wrong](#), Vox video by Harris, Barton, Chang and Edwards.

4. Fourth Encounter: Participatory action research - reconfiguring data and maps with communities for resilience.

We will discuss the concept of data justice and the relationship between this and the practice of transdisciplinary **co-production and action research** that intends to address social and data injustices. Epistemological and ontological assumptions in data and how to deal with them. Latin American Participatory Action Research, anthropophagy and the concept of (back)translation in Vilém Flusser. Case Study: engaging marginalised urban communities for resilience and disaster risk reduction (URBE Latam).



Key readings:

- Fals-borda, O. (1987). The Application of Participatory Action-Research in Latin America. *International Sociology*, 2(4), 329–347.
- Fraser, N. (2008). Abnormal Justice. *Critical Inquiry*, 34(3), 393–422. <https://doi.org/10.1086/589478>
- Viveiros De Castro, E. (2004). Perspectival Anthropology and the Method of Controlled Equivocation. *Tipiti: Journal of the Society for the Anthropology of Lowland South America*, 2(1). <https://doi.org/10.70845/2572-3626.1010>
- da Costa Marques, I. (2012). Ontological politics and situated public policies. *Science and Public Policy*, 39(5), 570–578. <https://doi.org/10.1093/scipol/scs063>
- Rufino, L. and Simas, L. (2018). *Fogo no mato: A ciência encantada das macumbas*. Mórula Editorial.
- Flusser, V. (197?). Retradução enquanto método de trabalho (Unpublished manuscript). Flusser Studies 15. <https://www.flusserstudies.net/sites/www.flusserstudies.net/files/media/attachments/flusser-retraducao.pdf>

Case study: URBE Latam

<https://urbe-latam.cos.ufrj.br>

- Builes-Jaramillo, A., Winson, A. E. G., Bee, E., Quirós, N., Urán, D., Rúa, J., Rivera-Flórez, L. A., Restrepo-Estrada, C., Gómez-Miranda, I. N., Dashwood, C., & Porto de Albuquerque, J. (2025). Community-driven natural hazard and physical vulnerability assessment in a disaster-prone urban neighborhood. *Natural Hazards and Earth System Sciences Discussions*, 1–31. <https://doi.org/10.5194/nhess-2024-221>
- Rivera Flórez, L. A., Builes-Jaramillo, A., Gómez Miranda, I. N., Restrepo Estrada, C. E., Rodríguez Gaviria, E. M., & Porto de Albuquerque, J. (2024). Community mapping based on Milton Santos as a tool for disaster response and risk management in self-built communities: Case study of El Pacífico, Medellín, Colombia. *Cogent Social Sciences*, 10(1), 2307181. <https://doi.org/10.1080/23311886.2024.2307181>
- Virgens, M. N. R. das, Brito, P. L., Lustosa, R., Pedrassoli, J., Ulbrich, P., Albuquerque, J. P. de, Ferreira, M. R., Severo, F. G., Figueiredo, A. da S., Fantin, M., Khalil, H., & Costa, F. (2024). Cartographic Resources for Equitable University–Community Interaction in Slum Areas. *Urban Science*, 8(1), Article 1. <https://doi.org/10.3390/urbansci8010020>

WATCH: [What is Data Colonialism?](#) BBC REEL.

5. Fifth Encounter: Participatory Artificial Intelligence - remaking algorithmic models for justice.

In this final conceptual encounter, we will discuss the future of urban data analytics with the promises and perils of Artificial Intelligence. The possibilities and impossibilities of a **participatory design in an era of Artificial Intelligence** and what it may imply for policy and practice. Case study: co-creating an AI data ecosystem to map and improve urban deprived areas and informal settlements (IDEAMAPS project).

Key readings:

- Birhane, A., Isaac, W., Prabhakaran, V., Diaz, M., Elish, M. C., Gabriel, I., & Mohamed, S. (2022). Power to the People? Opportunities and Challenges for Participatory AI. *Proceedings of the 2nd ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization*, 1–8. <https://doi.org/10.1145/3551624.3555290>
- Kandt, J., & Batty, M. (2021). Smart cities, big data and urban policy: Towards urban analytics for the long run. *Cities*, 109(October 2020), 102992. <https://doi.org/10.1016/j.cities.2020.102992>
- Floyd, C. (1992). Software Development as Reality Construction. In C. Floyd, R. Keil-Slawik, R. Budde, & H. Zullighoven (Eds.), *Software Development and Reality Construction* (pp. 86–100). Springer.
- Tironi, M., & Valderrama, M. (2021). Descolonizando los sistemas algorítmicos: diseño crítico para la problematización de algoritmos y datos digitales desde el Sur. *Palabra Clave*, 24(3), 1–33. <https://doi.org/10.5294/pacla.2021.24.3.2>
- Maas, J., & Inglés, A. M. (2024). Beyond Participatory AI. *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society*, 7(1), 932–942. <https://doi.org/10.1609/ai.es.v7i1.31693>
- Berditchevskaia, A., Malliaraki, E., & Peach, K. (2021). Participatory AI for humanitarian innovation. *Nesta*, September. <https://www.nesta.org.uk/report/participatory-ai-humanitarian-innovation-briefing-paper/>



Case study: IDEAMAPS

Thomson, D. R., Kuffer, M., Boo, G., Hati, B., Grippa, T., Elsey, H., Linard, C., Mahabir, R., Kyobutungi, C., Maviti, J., Mwaniki, D., Ndugwa, R., Makau, J., Sliuzas, R., Cheruiyot, S., Nyambuga, K., Mboga, N., Kimani, N. W., de Albuquerque, J. P., & Kabaria, C. (2020). Need for an Integrated Deprived Area “Slum” Mapping System (IDEAMAPS) in Low- and Middle-Income Countries (LMICs). *Social Sciences*, 9(5), 80. <https://doi.org/10.3390/socsci9050080>
